



Munich Personal RePEc Archive

# **Does Working Longer Make People Healthier and Happier?**

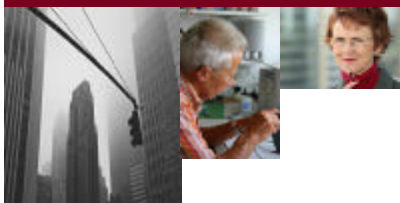
Calvo, Esteban

CENTER FOR RETIREMENT RESEARCH AT BOSTON  
COLLEGE

2006

Online at <http://mpra.ub.uni-muenchen.de/5606/>

MPRA Paper No. 5606, posted 07. November 2007 / 04:50



AN ISSUE IN BRIEF  
CENTER FOR  
RETIREMENT  
RESEARCH  
AT BOSTON COLLEGE

Work Opportunities for Older Americans

Series 2, February 2006

# DOES WORKING LONGER MAKE PEOPLE HEALTHIER AND HAPPIER?

By Esteban Calvo\*

## Introduction

Financing retirement is one of the major challenges facing an aging U.S. population. If individuals continue to retire in their early 60s, many will be hard pressed to maintain an adequate standard of living throughout retirement due to the declining role of Social Security, the shift to 401(k) plans, and low personal saving rates. Combine the retirement income crunch with the dramatic increase in life expectancy, and continued employment in later life appears to be an attractive option.

While it is clear that working longer would benefit older Americans financially, less attention has focused on the non-monetary effects of work at older ages. This brief addresses the impact of late-life paid work on physical and psychological well-being. The first section reviews the literature on work at older ages and elderly well-being. The second section describes the analysis. The third and fourth sections present the results. The fifth section identifies vulnerable groups. A final section offers concluding thoughts.

## Findings from Previous Studies

Much of the literature relevant to older workers and well-being is actually focused on other issues, such as healthy aging and retirement and not on the effects of work per se. Studies of healthy aging suggest that, for many individuals, working to an older age could have a number of positive physical and psychological effects. The primary reason is that opportunities for active engagement tend to decline in later life, and this trend tends to adversely impact overall well-being.<sup>1</sup> Since most jobs require workers to engage in a number of productive and social activities, working longer might bring a number of benefits associated with these activities. Prolonged employment during later life allows many older workers to continue doing activities similar to those performed in middle-age. In this sense, working longer appears to be helpful in maintaining meaning and a sense of purpose in life, as well as adapting to aging.<sup>2</sup>

Research on retirement, as opposed to work, also provides important clues regarding the potential consequences of working longer. Work is fundamental to one's identity; therefore, leaving one's job implies a partial loss of identity, which may produce lower levels of psychological well-being. Conversely, retire-

\* Esteban Calvo is a graduate student in Sociology at Boston College and a graduate research assistant at the Center for Retirement Research at Boston College. The author thanks the following people for their comments on and other forms of help in connection with this brief: Paula Errázuriz, Andy Eschtruth, Margaret Ford, Jessica Johnson, Alicia H. Munnell, Steven Sass, Mauricio Soto, and John Williamson. This brief was adapted from a longer article by Esteban Calvo (forthcoming).

LEARN MORE →

Search for other publications on this topic at:  
[www.bc.edu/crr/pub\\_wor.shtml](http://www.bc.edu/crr/pub_wor.shtml)

ment can be viewed as a gain in freedom to pursue other activities or interests, thus enhancing older individuals' well-being. To the extent that retirement implies the loss of valued rewards, it will be viewed negatively and perceived as a difficult adjustment. But retirement is also an experience of release, though its benefits vary between long-term and recent retirees.<sup>3</sup> Another important factor in the individual's response to retirement is the subjective sense of control. Voluntarily leaving a job could provide a sense of control in the work/retirement decision, thus moderating any negative aspects of retirement.<sup>4</sup> Although retirement may not be a choice for some particular groups (e.g. people constrained by financial or health problems), the vast majority of retirees currently leave their jobs voluntarily.<sup>5</sup>

Although research on healthy aging and retirement provides valuable insights, only a few studies have directly addressed the effects of late-life work on the physical and psychological well-being of older Americans. Most of these studies have found positive effects of work on well-being. The workplace appears as an important source of friends, confidants, and social support, even after long-term retirement as retirees tend to retain the network of friends they developed when they were working.<sup>6</sup> Job-related rewards seem to have a positive impact on mental health.<sup>7</sup> Performing more than 100 annual hours of volunteer or paid work beyond the retirement age has an independent beneficial effect on older adults' self-rated health and survival.<sup>8</sup> It has also been suggested that the conditions of work are more influential on physical and mental health than the pure amount of work. Namely, older employees who work in low-stress jobs with the hours they desire, experience better health. And surprisingly, physically demanding jobs have a positive effect on the physical health of those aged 65 and over.<sup>9</sup>

Most of the studies mentioned above identified relationships between work and well-being using data from a single point in time. These cross-sectional studies cannot establish causal relationships, because people with higher well-being may be more likely to remain at work. For example, individuals with no physical disability are more likely to continue working than those with a physical limitation. Only longitudinal studies — which follow the same individuals over time — can differentiate whether health problems cause cessation of work or continued work causes better health. The analysis below builds on the previous studies, but uses a longitudinal design, includes more control variables, and expands the notion of well-being to include more indicators.

## Methodology

The following analysis assesses the impact of individuals' work status in 2000 on their physical and psychological well-being in 2002. It uses longitudinal data drawn from the Health and Retirement Study (HRS) and the RAND-HRS data base.<sup>10</sup> The sample analyzed is composed of individuals aged 59 to 69 who were working or not-working in the year 2000 and were alive in 2002. People dead in 2002 were included in the regressions analyzing mortality.<sup>11</sup>

The variable "paid work status" measures if people are working for pay or not. It is related to the variable labor force participation, but is not the same. As an illustration, for the sample analyzed, 74 percent of those not working for pay are retired, 18 percent are not in the labor force (e.g. women who never worked outside of the home), 6 percent are disabled, and 2 percent are unemployed or partially retired.

Well-being was assessed by using a comprehensive set of six measures:<sup>12</sup>

- self-rated health;
- self-rated memory;
- activities of daily living (ADL) such as bathing, eating, and dressing;
- instrumental activities of daily living (IADL) such as handling money, shopping, and cooking;
- mood indicators such as depression, loneliness, and happiness; and
- mortality.<sup>13</sup>

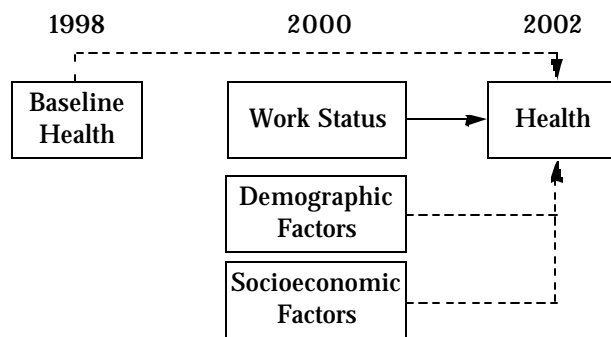
The study controls for previous well-being by including status in 1998.<sup>14</sup> It also includes variables for healthy behaviors, such as whether the respondent smokes, the number of drinks the respondent has per day, and whether the respondent exercises vigorously. Finally, this study also controls for demographic and socioeconomic factors.<sup>15</sup>

In sum, the methodology of this study enables us to determine whether health problems cause cessation of work or continued work causes better health (see Figure 1).

## How Work at Older Ages Affects Health

The results of the analysis of the impact of later-life work on well-being are presented in Appendix Table 1 (Model 1 through Model 3). They show that those who worked in 2000 tended to report greater well-being in 2002 than those who did not work in 2000.

FIGURE 1. TIME PERIODS USED IN DATA ANALYSIS



Source: Author's methodology.

For example, Figure 2 illustrates that paid work at older ages reduced the probability of reporting fair/poor health in 2002 by 6 percent. Other variables that had a statistically significant impact on the probability of reporting fair/poor health are highlighted using dark bars. While working, exercising, being white, married, and having more education and income had a favorable impact, poor physical and psychological health in 1998, smoking, being male and Hispanic had an unfavorable impact on self-rated health.

As illustrated in Appendix Figures 1 through 4, work also had a modest, but statistically significant, beneficial impact in the cases of ADL, IADL, mood indicators, and mortality. Paid work at older ages reduced the probability of having any ADL limitation by 2 percent, of having any IADL limitation by 2 percent, of reporting negative mood indicators by 2 percent, and of dying by 1 percent.<sup>16</sup> Paid work did not

significantly affect self-rated memory, illustrating that other factors are better predictors than work (e.g. being male and initial self-rated memory).

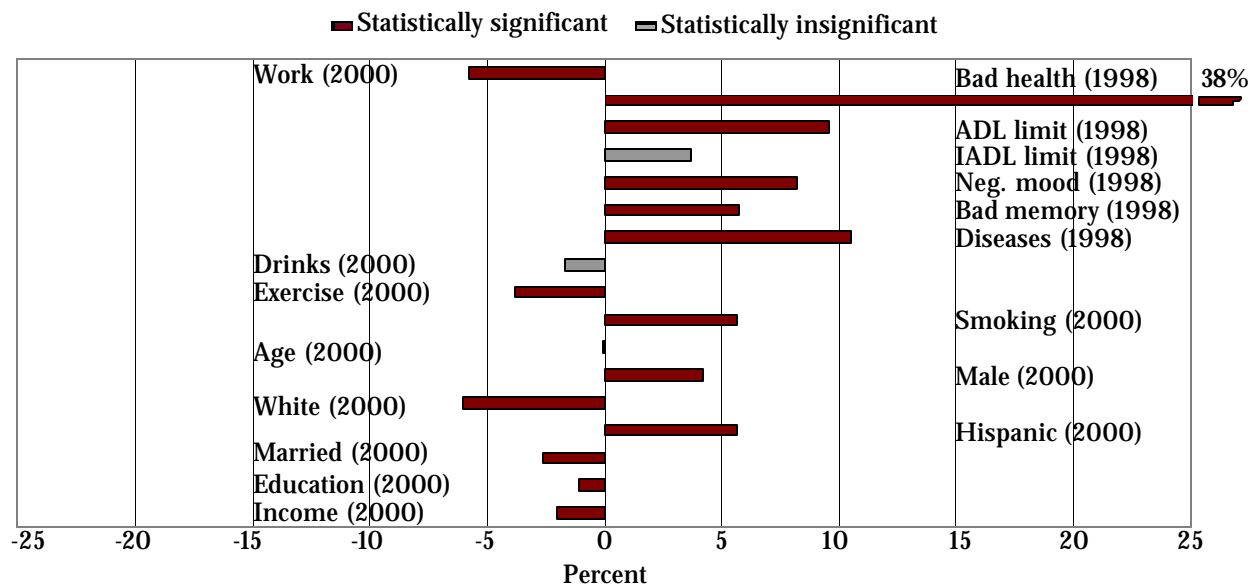
Not surprisingly, well-being baselines and healthy behaviors are related to follow-up physical and psychological well-being. But after controlling for baseline effects and other variables, these findings suggest that there is a causal relationship between work and well-being.<sup>17</sup>

## How Undesirable Jobs Affect Psychological Health

The results presented above suggest that longer working lives have beneficial effects on individuals' physical and psychological well-being. However, this analysis did not distinguish between different types of jobs. Previous literature suggests that the characteristics of work matter, and we all know that jobs are not all the same. Work can be backbreaking, stressful, and tedious. Therefore, this next exercise explores the hypothesis that undesirable jobs could have detrimental effects on individuals' well-being. "Undesirable jobs" are those that have excessive demands or otherwise cause dissatisfaction.<sup>18</sup> They are the type of jobs that people would probably not choose voluntarily.<sup>19</sup>

The analysis of a subgroup of older workers suggests that having an undesirable job does not change the favorable effects of paid work on self-rated health, ADL and IADL (see results for Model 4 in Appendix Table 1). However, it does have an impact on follow-up mood indicators and mortality. Higher job satis-

FIGURE 2. EFFECTS OF PAID WORK AT OLDER AGES ON THE PROBABILITY OF REPORTING FAIR/POOR SELF-RELATED HEALTH (2002)



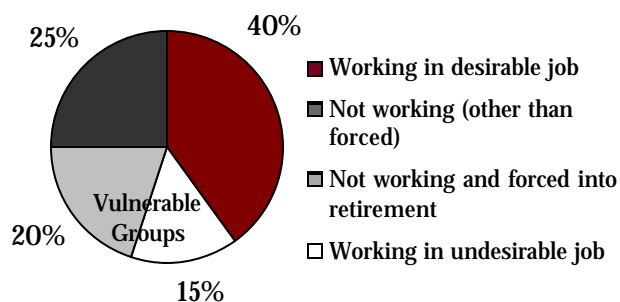
Source: Author's calculations (probit estimation reporting discrete and marginal coefficients) using data from the 1998, 2000, and 2002 waves of the Health and Retirement Study.

faction is associated with an improved mood. Those who do not enjoy going to work are 5 percent more likely to report negative mood indicators. Lower job demands are statistically associated with survival but have only a trivial effect.<sup>20</sup>

## Vulnerable Groups

While working longer seems beneficial for most, policymakers should consider the potential negative consequences of forcing all people to work, for example, by raising the early eligibility age for Social Security benefits.<sup>21</sup> In rough numbers, people who retire involuntarily constitute about 20 percent of the population analyzed (see Figure 3). For this group, work is not an alternative.<sup>22</sup> Also, 15 percent of the population analyzed was working in undesirable jobs, and 40 percent was working in less demanding and more satisfying jobs. However, if the early retirement age were raised, an important group of people would be forced to work in late-life, regardless of whether or not they enjoy working or have a highly demanding job. For this group, continuing work would have opposing effects: beneficial in terms of self-rated health, ADL and IADL, but harmful for their mood, and to a lesser extent, their survival. For both vulnerable groups, working fewer annual hours, reducing work-strain, or participating in other social or productive activities — like volunteering — seem more beneficial than working longer.

FIGURE 3. VULNERABLE GROUPS BY PAID WORK STATUS



Source: Author's calculations using data from the 2000 wave of the Health and Retirement Study.

\*Note: The sample size is 6,511.

## Conclusion

This analysis provides several interesting insights into the relationship between work at older ages and well-being. It suggests that longer working lives will help most people maintain their overall well-being.

While working longer seems beneficial for most people, it will likely have negative consequences for some. The type of job seems to be a critical factor. Undesirable jobs can wash out the potential favorable effects of work. Another critical factor is the opportunity to continue working. Older workers may be willing to prolong paid work, but, in order to find a job, they need to be able to work and have a real demand for their labor. Policymakers need to consider these factors when evaluating proposals to keep people in the labor force.

These findings suggest interesting areas for future research. For example, an increase in the early retirement age reduces the ability of people to voluntarily decide their labor force participation. Less control in the work/retirement decision could have an adverse impact on the well-being of older individuals.<sup>23</sup> Also variations in the benefits of work as people move through their 60s could be examined. Even though work at older ages seems beneficial for many, the benefits may decrease, or stop increasing, after a certain age or amount of time worked per year.

## Endnotes

1 Much evidence suggests that more active elderly people are less likely to die or have various physical and mental illnesses (Brummett et. al., 2001; Everard et. al., 2000; Rowe and Kahn, 1998; and Siegrist, et al., 2004). Remaining active and socially engaged seems to have a positive impact on identity (Erickson et al., 1986). Social integration, social support, and positive interactions tend to be associated with positive well-being, even after controlling for other variables related to social competence (Cohen, 2004). Social and productive activities appear as effective as fitness activities in lowering the risk of death (Glass, et. al, 1999). And the risk of social isolation is comparable to that associated with cigarette smoking (House, 2001).

2 Different authors suggest this interpretation, but none of them identify a compulsory reason for maladjustment in retirement (Atchley, 1999; and Rowe and Kahn, 1998). Numerous studies suggest that non-paid activities, such as volunteering, care-giving, housework, and informal help to friends, can be as beneficial as paid work for older individuals' well-being. However, they do not provide the benefits of additional income that paid work does. For research regarding non-paid activities, see: Herzog et al. (1991); Herzog et al. (1998); Glass et al. (1999); Luoh and Herzog (2002); and Morrow-Howell et al. (2003).

3 Bossé et al. (1990); Elder (1995); Kim and Moen (2002); and Kosloski et al. (2001).

4 Volunteerism is an expression of self-efficacy, mastery, self-directedness, self-agency, autonomy, self-determination, and other forms of sense of control that are paralleled by biological responses that buffer stress reactions. Similarly, the degree of voluntariness in the work/retirement decision partially mediates the well-being outcomes of either work or retirement (Bender and Jivan, 2005; Herzog et al., 1998; Gallo et al., 2000; and Kim and Moen, 2002).

5 According to the HRS (2002), about 30 percent of the retirees were forced to retire. Prudential (2005) finds that 38 percent fall into this group.

6 Bossé et al. (1990).

7 Erickson et al. (1986).

8 Additional hours do not increase the benefit. See Luoh and Herzog (2002).

9 Herzog et al. (1991).

10 The HRS is a nationally representative panel survey of U.S. households with individuals aged 51-61 in 1992 and their spouses. The RAND Center for the Study of Aging created the RAND-HRS data based on HRS data.

11 The sample size varies for each dependent variable according to available data. The data used in all of the regressions were adjusted to the weights of the general population.

12 The effect of work on these six measures of well-being (given the set of control variables) was estimated using probit regression models for each well-being outcome. Probit regressions fit maximum-likelihood models, allowing the estimation of the probability of each well-being outcome, conditional on a set of independent variables. Rather than reporting the regular probit coefficients, this brief reports the discrete and marginal effects, holding all other variables at their mean, a technique described in Long and Freese, 2004.

13 The six measures of well-being were coded as dummy variables. For more information about related measurements in the HRS, see Saint Clair et al. (2004); Steffick (2000); Fonda and Herzog (2004); and Ofstedal et al. (2005).

14 Baselines also consider chronic diseases, a binary variable that measures the presence or absence of any of eight chronic diseases: high blood pressure, diabetes, cancer, lung disease, heart disease, stroke, psychiatric problems, and arthritis. More information about the measures of chronic diseases can be found in Saint Clair et al. (2004); and Fisher et al. (2005).

15 Gender, race, ethnicity, and marital status were coded as dummy variables. Household income was measured in increments of \$100,000 dollars for a better graphical presentation of the data.

16 Control variables generally behaved as expected. Generally, the corresponding baseline of the dependent variable had the higher coefficient. However, self-rated health and smoking were two of the most constant predictors of well-being outcomes.



17 Since groups of workers and non-workers were not randomly assigned and data were collected every two years, these results should be interpreted with caution no matter how rigorous the controls included in the model appear.

18 Job satisfaction measures how much people enjoy going to work. "Work demands" is an index of job characteristics including: physical effort, lifting heavy loads, stooping/kneeling/crouching, good eyesight, and stress. The index runs from 0 to 5.

19 Additional data regarding voluntariness and sense of control in relation to work status and work patterns are insufficient for the sample analyzed.

20 These effects are both similar and contrasting to cross-sectional effects reported in Herzog et al. (1998). Job satisfaction — understood as the most intrinsic non-economic job reward — positively affects psychological well-being. However, this study found detrimental effects of physical demands on older adults' mood indicators. These results must be interpreted with special caution, because people will tend to remain at work if they enjoy working and if they do not have a highly demanding job.

21 Raising the early eligibility age could also reduce the flexibility to work part time as a transitional path from full-time work to retirement.

22 Previous studies also suggest that overall well-being is likely to be impaired for those forced into retirement (Bender and Jivan, 2005; Herzog et al., 1998; Gallo et al., 2000; and Kim and Moen, 2002). People are forced into retirement mainly due to health reasons and job displacement (Prudential, 2005).

23 Fortunately, increasing labor force participation and maintaining choice are not incompatible (Herzog et al., 1991).

## References

- Atchley, Robert C. 1999. *Continuity and Adaptation in Aging: Creating Positive Experiences*. Baltimore, MD: Johns Hopkins University Press.
- Bender, Keith A. and Natalia A. Jivan. 2005. *What Makes Retirees Happy?* Issue in Brief 28. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Bossé, Raymond, Carolyn M. Aldwin, Michael R. Levenson, Kathryn Workman-Daniels, and David J. Ekerdt. 1990. "Differences in Social Support among Retirees and Workers: Findings from the Normative Aging Study." *Psychology and Aging* 5(1): 41-47.
- Brummett, Beverly H., John C. Barefoot, Ilene C. Siegler, Nancy E. Clapp-Channing, Barbara L. Lytle, Hayden B. Bosworth, Redford B. Williams, and Daniel B. Marx. 2001. "Characteristics of Socially Isolated Patients with Coronary Artery Disease Who Are at Elevated Risk of Mortality." *Psychosomatic Medicine* 63:267-272.
- Cohen, Sheldon. 2004. "Social Relationship and Health." *American Psychologist* 59:676-684.
- Elder, G. H., Jr. 1995. "The Life Course Paradigm: Social Change and Individual Development." In Moen, P.; Elder, G. Jr. & Lusher, K. (Eds.), *Examining Lives in Context: Perspectives on the Ecology of Human Development*. Washington, DC: American Psychological Association.
- Erickson, Erik H., Joan M. Erikson, Helen Q. Kivnick. 1986. *Vital Involvement in Old Age*. New York: Norton.
- Everard, Kelly M., Helen W. Lach, Edwin B. Fisher, and Carolyn M. Baum. 2000. "Relationship of Activity and Social Supports to the Functional Health of Older Adults." *Journal of Gerontology: Social Sciences* 55(4): 208-S212.
- Fisher, Gwenith G., Jessica D. Faul, David R. Weir, and Robert B. Wallace. 2005. "Documentation of Chronic Diseases Measures in the Health and Retirement Study (HRS/AHEAD)." HRS/AHEAD Documentation Report, Ann Arbor: Survey Research Center University of Michigan.
- Fonda, Stephanie and Regula Herzog. 2004. "Documentation of Physical Functioning Measured in the Health and Retirement Study and Health Dynamics among the Oldest Old." HRS/AHEAD Documentation Report, Ann Arbor: Survey Research Center University of Michigan.
- Gallo, William T., Elizabeth H. Bradley, Michele Siegel, and Stanislav V. Kasl. 2000. "Health Effects of Involuntary Job Loss among Older Workers: Findings from the Health and Retirement Survey." *Journal of Gerontology: Social Sciences* 55B(3): S131-S140.
- Glass, Thomas A., Carlos Mendes de Leon, Richard A. Marottoli, and Lisa F. Berkman. 1999. "Population Based Study of Social and Productive Activities as Predictors of Survival among Elderly Americans." *British Medical Journal* (319): 478-483.
- Herzog, Regula A., James S. House, and James N. Morgan. 1991. "Relation of Work and Retirement to Health and Well-being in Older Age." *Psychology and Aging* 6(2): 201-211.
- Herzog, Regula A., Hazel R. Markus, Melissa M. Franks, and Diane Holmberg. 1998. "Activities and Well-being in Older Age: Effects of Self-concept and Educational Attainment." *Psychology and Aging* 13(2): 179-185.
- House, James S. 2001. "Social Isolation Kills, but How and Why?" *Psychosomatic Medicine* 63:273-274.
- Kim, Jungmeen E. and Phyllis Moen. 2002. "Retirement Transitions, Gender, and Psychological Well-being: a Life-course, Ecological Model." *Journal of Gerontology: Psychological Sciences* 57B(3): P212-P222.
- Kosloski, Karl, David Ekerdt, and Stanley De Viney. 2001. "The Role of Job-related Rewards in Retirement Planning." *Journal of Gerontology: Psychological Sciences* 56B(3): 160-169.
- Long, J. Scott and Jeremy Freese. 2004. *Regression Models for Categorical Dependent Variables Using STATA*. Texas: STATA Press.
- Luoh, Ming-Ching and Regula A. Herzog. 2002. "Individual Consequences of Volunteer and Paid Work in Old Age: Health and Mortality." *Journal of Health and Social Behavior* 43(4): 459-509.



Morrow-Howell, Nancy, Jim Hinterlong, Philip Rozario, and Fengyan Tang. 2003. "Effects of Volunteering on the Well-being of Older Adults." *Journal of Gerontology: Social Sciences* 58B(3): S137-S145.

Ofstedal, Mary B., Gwenith G. Fisher., and Regula A. Herzog. 2005. Documentation of Cognitive Functioning Measures in the Health and Retirement Study. Ann Arbor, MI: Survey Research, University of Michigan.

Prudential Financial. 2005. Roadblocks to Retirement. A Report on What Happens When Living Today Gets in the Way of Financial Security Tomorrow. Prudential's Four Pillars of Retirement Series.

Rowe, John W. and Robert L. Kahn. 1998. *Successful Aging*. New York: Pantheon.

Saint Clair, Patricia, Delia Bugliari, Sandi Chien, Steven Haider, Orla Hayden, Michael Hurd, Serhii Ilchuk, Gabriela Lopez, David Loughran, Constantijn Panis, Philip Pantoja, Monika Reti, Julie Zissimopolous. 2004. RAND HRS Data Documentation, Version D. Labor and Population Program, RAND Center for the Study of Aging.

Siegrist, Johannes, Olaf Von Dem Knesebeck, and Craig Evan Pollack. 2004. "Social Productivity and Well-being of Older People: a Sociological Exploration." *Social Theory and Health* 2:1-17.

Steffick, Diane E. 2000. Documentation of Affective Functioning Measures in the Health and Retirement Study. HRS/AHEAD Documentation Report, Ann Arbor: Survey Research Center University of Michigan.

University of Michigan. 1998, 2000 and 2002. Health and Retirement Study.  
<http://hrsonline.isr.umich.edu/>

---

# Appendix

---

APPENDIX TABLE 1. EFFECTS OF PAID WORK AT OLDER AGES ON INDIVIDUAL'S FOLLOW-UP WELL-BEING

Variables	Self-Rated Health (2002) (Fair-Poor vs. Excellent-Good)				ADL (2002) (Any Limitation vs. No Limitation)				IADL (2002) (Any Limitation vs. No Limitation)			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Working for Pay (2000)	-.158***	-.062***	-.058***	-	-.094***	-.026***	-.024**	-	-.080***	-.026***	-.021**	-
Enjoy Working (2000)	-	-	-	-.032	-	-	-	-.004	-	-	-	-.020
Demanding Job (2000)	-	-	-	.004	-	-	-	-.002	-	-	-	.000
Fair/Poor Self-Rated Health (1998)		.403***	.376***	.322***		.074***	.070***	.069***		.059***	.057***	.016
Any ADL Limitation (1998)		.104***	.096***	.064*		.255***	.252***	.191***		.082***	.080***	.085***
Any IADL Limitation (1998)		.045*	.037	-.045		.061***	.062***	.021		.135***	.135***	.118***
Negative Mood Indicators (1998)		.095***	.082***	.079***		.037***	.033***	.026*		.033***	.032***	.033**
Fair/Poor Self-Rated Memory (1998)		.084***	.058***	.049**		.017*	.015	.023*		.019**	.019**	.014
Any Chronic Diseases (1998)		.103***	.105***	.059***		.051***	.051***	.034***		.027***	.026**	.006
3 Or More Drinks Per Day (1998)		-.002	-.017	-.012		-.019	-.020	-.012		-.019	-.020*	-.008
Vigorous Exercise (1998)		-.040***	-.038***	-.006		-.024***	-.023**	-.005		-.016*	-.014*	-.009
Smoking (1998)		.070***	.056***	.038*		.018*	.017	.016		.025***	.023**	.013
Age (2000)			-.001	-.003			.001	.001			.001	.000
Male (2000)			.042***	.025			.001	.010			.006	.017*
White (2000)			-.060***	-.050*			-.003	.003			-.005	-.009
Hispanic (2000)			.056*	.019			.011	.005			-.016	-.020
Married (2000)			-.026*	.003			-.013	.010			-.009	-.005
Years of Education (2000)			-.011***	-.010***			-.001	.000			-.001	.000
Household Income (2000)			-.020*	-.013			-.001	.001			-.015*	-.006
Pseudo R <sup>2</sup>	.0329	.2931	.3089	.2444	.0320	.2710	.2725	.1984	.0358	.2349	.2398	.1632
Number of Observations	6251	6251	6251	2563	6251	6251	6251	2563	6251	6251	6251	2563

Source: Author's calculations (probit estimation reporting discrete and marginal effects) using data from the 1998, 2000 and 2002 waves of the Health and Retirement Study.

\*Note: \*p<.05, \*\*p<.01, \*\*\*p<.001

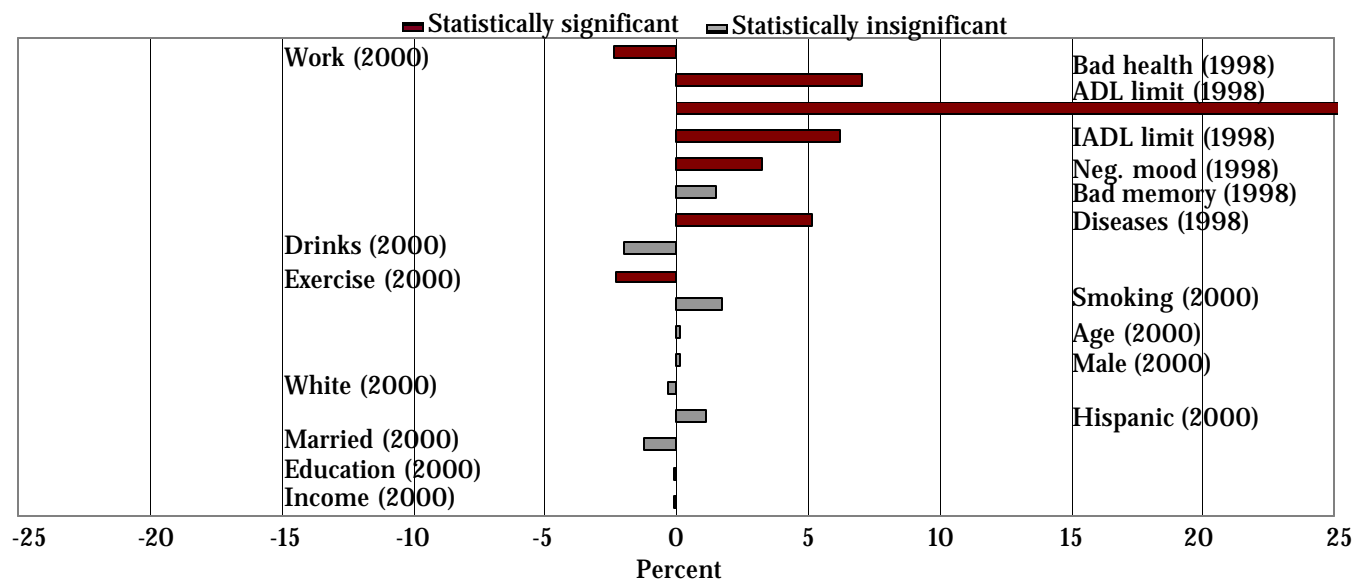
APPENDIX TABLE 1. EFFECTS OF PAID WORK AT OLDER AGES ON INDIVIDUAL'S FOLLOW-UP WELL-BEING (CONTINUATION)

Variables	Mood Indicators (2002) (Negative vs. Positive)				Mortality (2002) (Dead vs. Alive)				Self-Rated Memory (2002) (Fair-Poor vs. Excellent-Good)			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Working for Pay (2000)	-.075***	-.026**	-.018*	-	-.026***	-.014***	-.009**	-	-.090***	-.032**	-.023	-
Enjoy Working (2000)	-	-	-	-.049**	-	-	-	-.003	-	-	-	-.013
Demanding Job (2000)	-	-	-	.004	-	-	-	.002*	-	-	-	.004
Fair/Poor Self-Rated Health (1998)		.065***	.055***	.032*		.038***	.004***	.014**		.124***	.091***	.010***
Any ADL Limitation (1998)		.083***	.077***	.033		-.013**	.012**	.003		.038	.032	.025
Any IADL Limitation (1998)		-.021	-.023	-.035		.015*	.014*	-.003		.038	.029	.006
Negative Mood Indicators (1998)		.265***	.243***	.190***		.003	.003	-.002		.060***	.054**	.058*
Fair/Poor Self-Rated Memory (1998)		.045***	.038***	.023		-.006	-.006	-.002		.413***	.382***	.360***
Any Chronic Diseases (1998)		.027*	.025*	.028*		.015**	.013**	.006*		.026	.028	.021
3 Or More Drinks Per Day (1998)		.001	-.018	-.020		.008	.001	.002		.040	.016	.000
Vigorous Exercise (1998)		-.023**	-.019*	-.018		-.010**	-.009**	-.003		-.019	-.021	-.032*
Smoking (1998)		.048***	.037***	.027		.023***	.020***	.017***		.020	.007	-.026
Age (2000)			.000	.001			.002***	.001**			.000	.001
Male (2000)			-.038***	-.019			.016***	.010***			.067***	.075***
White (2000)			.002	.005			-.004	.001			-.048**	-.032
Hispanic (2000)			-.016	.015			-.004	-.005			.019	.014
Married (2000)			-.030***	-.046***			-.012**	-.012***			.008	-.001
Years of Education (2000)			-.007***	-.006**			.000	.000			-.021***	-.019***
Household Income (2000)			.000	.001			-.007	-.004			-.017	-.031*
Pseudo R <sup>2</sup>	.0152	.1859	.1996	.1665	.0187	.0909	.1182	.1952	.0094	.1935	.2178	.2101
Number of Observations	6060	6060	6060	6060	6473	6473	6473	2608	6053	6053	6053	2513

Source: Author's calculations (probit estimation reporting discrete and marginal effects) using data from the 1998, 2000 and 2002 waves of the Health and Retirement Study.

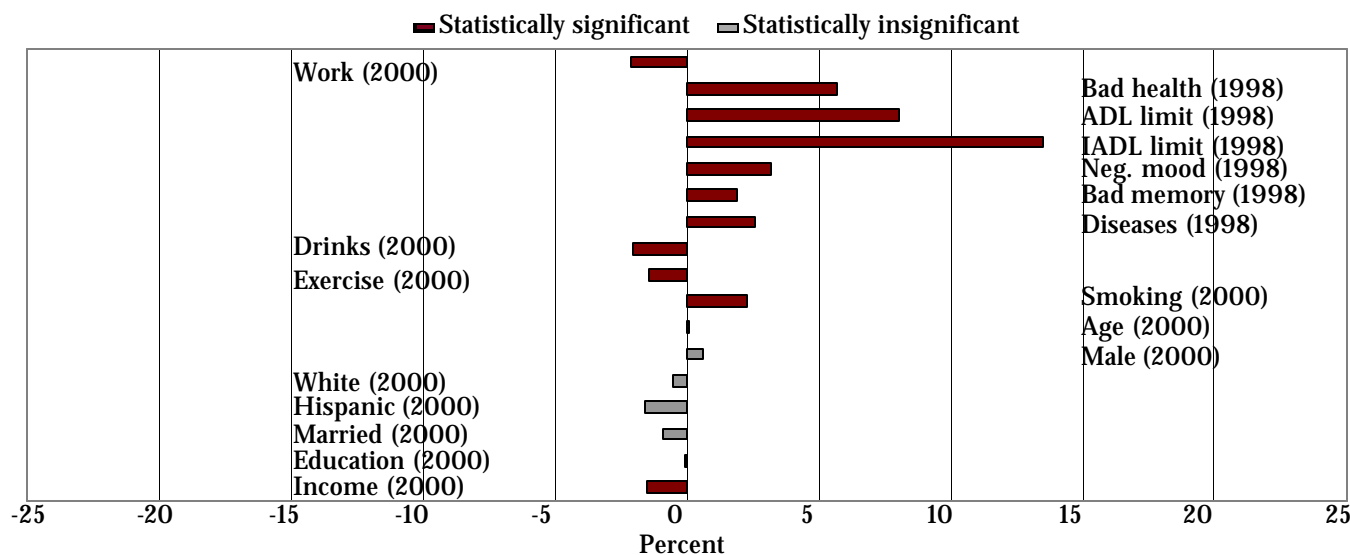
\*Note: \*p<.05, \*\*p<.01, \*\*\*p<.001.

APPENDIX FIGURE 1. EFFECTS OF PAID WORK AT OLDER AGES ON THE PROBABILITY OF REPORTING ANY ADL LIMITATION (2002)



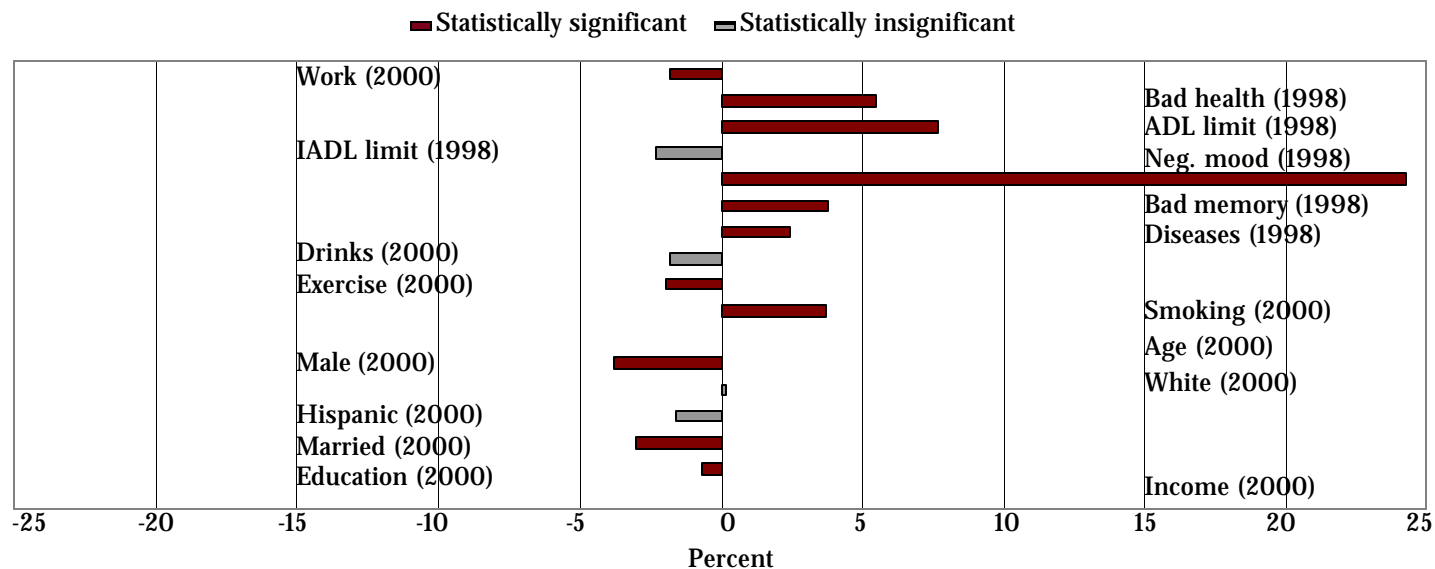
Source: Author's calculations (probit estimation reporting discrete and marginal coefficients) using data from the 1998, 2000, and 2002 waves of the Health and Retirement Study.

APPENDIX FIGURE 2. EFFECTS OF PAID WORK AT OLDER AGES ON THE PROBABILITY OF REPORTING ANY IADL LIMITATION (2002)



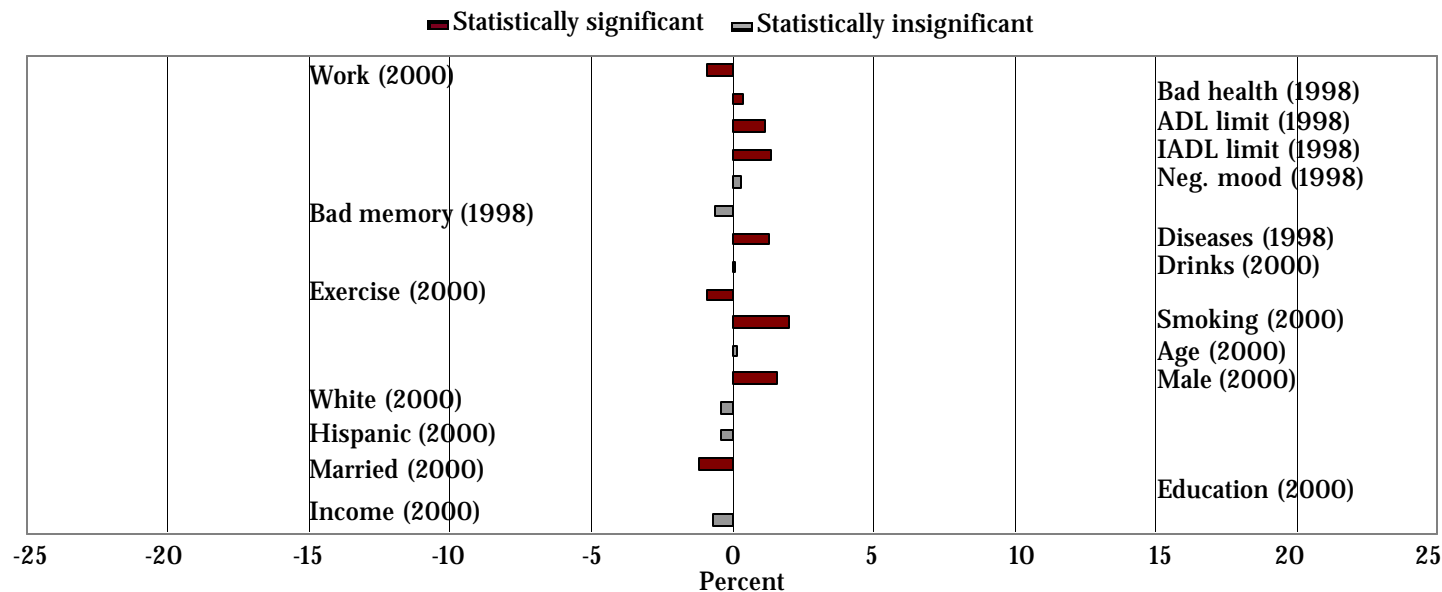
Source: Author's calculations (probit estimation reporting discrete and marginal coefficients) using data from the 1998, 2000, and 2002 waves of the Health and Retirement Study.

APPENDIX FIGURE 3. EFFECTS OF PAID WORK AT OLDER AGES ON THE PROBABILITY OF REPORTING NEGATIVE MOOD INDICATORS (2002)



Source: Author's calculations (probit estimation reporting discrete and marginal coefficients) using data from the 1998, 2000, and 2002 waves of the Health and Retirement Study.

APPENDIX FIGURE 4. EFFECTS OF PAID WORK AT OLDER AGES ON THE PROBABILITY OF DYING (2002)



Source: Author's calculations (probit estimation reporting discrete and marginal coefficients) using data from the 1998, 2000, and 2002 waves of the Health and Retirement Study.



## About the Center

The Center for Retirement Research at Boston College was established in 1998 through a grant from the Social Security Administration. The Center's mission is to produce first-class research and forge a strong link between the academic community and decisionmakers in the public and private sectors around an issue of critical importance to the nation's future. To achieve this mission, the Center sponsors a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources. Since its inception, the Center has established a reputation as an authoritative source of information on all major aspects of the retirement income debate.

## Affiliated Institutions

American Enterprise Institute  
The Brookings Institution  
Center for Strategic and International Studies  
Massachusetts Institute of Technology  
Syracuse University  
Urban Institute

## Contact Information

Center for Retirement Research  
Boston College  
Fulton Hall 550  
Chestnut Hill, MA 02467-3808  
Phone: (617) 552-1762  
Fax: (617) 552-0191  
E-mail: [crr@bc.edu](mailto:crr@bc.edu)  
Website: <http://www.bc.edu/crr>

[www.bc.edu/crr/](http://www.bc.edu/crr/)